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MFRC Holds Fourth Annual Meeting

Meeting attendees are pleased with the MFRC's progress

"Around the world the fight against crime, especially terrorism, is a massive undertaking, and we're seeing the organization of a massive coalition to fight it. We're proud at Ames Laboratory to be a part of that coalition." With that statement, Ames Laboratory Director Tom Barton kicked off the fourth annual meeting of the Midwest Forensics Resource Center at Ames Lab, June 5. Referencing the Lab's efforts in the 1940s to develop the process to purify uranium for the Manhattan Project, Barton told MFRC members this is not the first time the United States has fought forces that have mobilized to destroy it. Just as the Lab's scientists were proud to be part of the World War II effort, Barton said they are equally as proud today to help combat crime in all forms. Adding that fighting crime takes a team effort, Barton told MFRC members, "We're proud you are coming here and working with us." *continued*

Participants in the Midwest Forensics Resource Center Annual Meeting

MFRC holds fourth annual meeting

The MFRC is made up of representatives from crime laboratories across the Midwest. Its goals are to provide the labs with casework assistance, training, education and research, or "CATER," said David Baldwin, director of the MFRC. Baldwin says the four goals demonstrate a strong commitment to service and partnership. "We want to continue to improve crime-lab operations within the Midwest region and to pool needs and resources in order to build a strong partnership with the crime labs," said Baldwin.

An affirmation of this commitment to partnership is manifested in the expansion of the MFRC membership. Prior to the 2003 annual meeting, MFRC states included North Dakota, South Dakota, Nebraska, Kansas, Missouri, Minnesota, Wisconsin, Illinois and Iowa. At this year's meeting, however, the MFRC was pleased to add crime-lab officials from the states of Michigan and Ohio to its ranks. Recognizing the growing list of partners, an obviously pleased Baldwin joked at the opening session, "Soon we'll need a larger room."

Todd Zdorkowski, associate director of the MFRC, noted the addition of the two new states confirms the MFRC's mission is right on track. "Our newest partners have come to us via word-of-mouth references. One crime-lab director says something to another, and we find ourselves playing host to a new partner. The new directors are skeptical of the MFRC at first, but our meetings and work convince them the MFRC is useful," said Zdorkowski. "New crime labs wouldn't be joining if we didn't have something useful and new to offer them. I think they appreciate the opportunity to help set the MFRC's agenda, to work on its projects and to see the results."

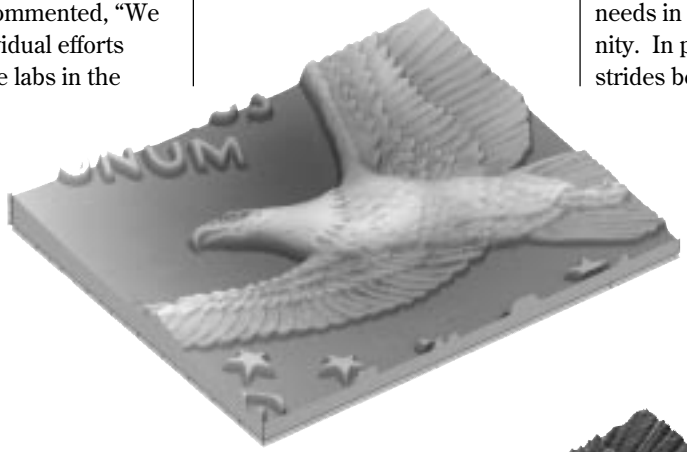
The ability to offer casework assistance and research expertise is what attracted Mike Stone to the MFRC. Stone is a member of the Omaha Police Department's crime laboratory, which is the second crime lab in the state of Nebraska to join the MFRC. Stone became interested in becoming a partner in the MFRC after reading a newspaper article in which the center was mentioned. Intrigued mostly by the MFRC's ability to coordinate research and casework assistance, Stone decided the time was right to attend a meeting of the MFRC. Following the opening session, Stone commented, "We have lots of individual efforts going on at crime labs in the Midwest, but no one coordinates that effort. The MFRC brings a kind of much-needed 'one-call-does-it-all' approach to crime-lab needs."

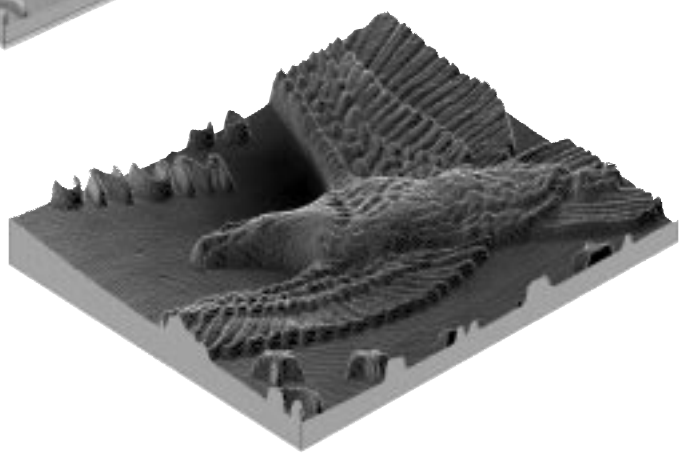
"The MFRC brings a kind of much-needed 'one-call-does-it all' approach to crime-lab needs." –Mike Stone, Omaha Police Dept.

This coordinated approach paid off for Sandra Stoltenow, criminologist supervisor with the Iowa Department of Criminal Investigation, in solving a perplexing case in Marshalltown, Iowa, in May 2002. The case involved the discovery of the bodies of two men who had been sleeping overnight in a tent pitched in one of the victim's father's backyard.

Puzzled by the lack of any signs of foul play, and because autopsies of the victims did not show a cause of death, the DCI sought the MFRC's expertise to help solve the case. MFRC officials put them in touch with an electrical-safety and low-voltage specialist at Iowa State University who helped determine that an electric space heater the men had been using inside the tent that was sitting on the wet tent floor likely sent a low voltage current through the men and electrocuted them. This information allowed the DCI to close the case. A grateful Stoltenow said, "This saved time and trouble and a whole pile of evidence we didn't have to go through in the lab."

In addition to its relationships with crime laboratories, the MFRC continues to nurture its relationships with numerous federal agencies, including the Bureau of Alcohol, Tobacco, Firearms and Explosives; the FBI; the Department of Justice/ National Institute of Justice; and the Department of Energy. Representing DOE's National Nuclear Security Administration at the annual meeting, Steve Shubert, a program manager who tries to develop relationships between DOE labs and law enforcement, applauded the MFRC's diverse approach to forensic science and crime fighting, saying the center's mission and goals address critical needs in the forensics community. In particular, he believes the strides being *continued*





The top image is of an American Eagle on an ordinary coin. The bottom diagram shows a contour map made from that image using a profilometer. Maps like this one can be used to accurately match marks on tools to tool manufacturers.

made in research are particularly relevant to efforts to attain convictions in the nation's courts. "When you start trying to translate research into legally defensible testimony, there's sometimes a gap," said Schubert, alluding to a 1993 ruling by the U.S. Supreme Court (William Daubert vs. Merrell Dow Pharmaceuticals, Inc.) that set new criteria for what can and cannot be introduced as evidence in a court of law.

"In essence, testimony introduced has to be proved by scientific method," said Scott Chumbley, an Ames Laboratory metallurgist and an Iowa State University professor of materials science and engineering, who is working on a new method that may address the Supreme Court's requirements.

Chumbley's research project is one of five currently being funded by the MFRC at the Ames Lab and ISU. Chumbley's and co-principal investigator Larry Genalo's research is designed to use certain 3-D characterization methods and statistical methods to identify tool marks. It's commonly known that certain manufacturing processes leave unique marks on tools, such as knives. In the past, investigators were successful at using a visual-examination approach to match these tools to their manufacturers. Now, however, scientists such as Chumbley and Genalo, associate and an ISU professor of materials science and engineering, are hoping to far surpass the visual method with the use of scientific tools. Their research involves the use of a profilometer, a scanning tool that measures the height of tool marks and then develops a type of contour map of the marks from the scan. This map can then be used to precisely identify a tool mark, allowing forensic specialists to match the mark to its manufacturer. This scientifically tested technique should address the needs of the court system for providing quantifiable scientific data with known measures of reliability. Preliminary results show the reproducibility of the instrument is better than 99.9 percent on known samples.

"It's a pretty good fit," announced Chumbley to MFRC members. In addition, he said the new system is "scientific, low-cost and computerized," three attributes that are extremely important to crime labs operating on tight budgets.

"This research has great application to my world," said Stone. "Everything we do is geared toward the discovery and identification of evidence."

Other research efforts highlighted at the meeting included efforts to use magnetic-imaging techniques to reconstruct and identify obliterated serial numbers on handguns, and the use of laser ablation inductively coupled plasma-mass spectroscopy to analyze and identify glass evidence.

While the MFRC's research and casework assistance efforts have grown since the last annual meeting and are expected to grow again soon because of the 15 new projects currently under review, so have its education and training efforts. For example, the MFRC has held workshops on mass spectroscopy, capillary electrophoresis and forensics-related research for criminalists and examiners.

The next workshop is slated for July 2003 and will address the analysis of glass evidence. In addition, the center has discussed several drug-analysis training ideas with the U.S. Drug Enforcement Administration and has prepared a series of training development projects that help meet training needs identified by the MFRC.

At the same time the MFRC is reaching out to forensic experts through workshops, it is also working to establish a network of forensic science educators that will be used as a resource to resolve questions raised by crime-lab experts. "We want to supply good resource people to the forensics community," said Baldwin.

Praising the MFRC for having good direction, organization, resources and training, Schubert said he believes the MFRC is a prototype for the type of regional relationships the DOE would like to see developed for the forensics community across the country. Something similar in scope is already underway at the Savannah River Technology Center for the southeastern United States, according to Schubert.

Perhaps best summarizing how far the MFRC has come in its short, four-year existence and how far it has the potential to go, Stone said, "If in the future we have a unique problem, I think the MFRC is going to be able to help solve it." ■

~ Steve Karsjen